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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,573	12/31/2003	Hugh Herr	MIT-143AUS	5703
22494 7590 04/11/2007 DALY, CROWLEY, MOFFORD & DURKEE, LLP SUITE 301A 354A TURNPIKE STREET CANTON, MA 02021-2714			EXAMINER WEISKOPF, MARIE	
			ART UNIT	PAPER NUMBER
			3661	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/11/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/750,573

Applicant(s)

HERR ET AL.

Examiner

Marie A. Weiskopf

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-26 is/are allowed.
- 6) ☒ Claim(s) 27 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 27 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by “The Bow Leg Hopping Robot” by Zeglin.

- In regard to claim 27, Zeglin discloses a method for providing rotational leg control during a swing phase of a robotic locomotion device, the method comprising identifying kinematic control elements of the leg, identifying energetic control elements of the leg, separating the kinematic control elements of the leg from the energetic control elements of the leg. (Page 17, lines 10-24)
- In regard to claim 28, Zeglin discloses determining an energetic control level of the leg to control system energy within robotic locomotion device and determining a kinematic control level of the leg to provide a desired energetically possible movement trajectory in one step. (Page 17, lines 10-24)

### ***Allowable Subject Matter***

3. Claims 1-26 are allowed.

4. The following is a statement of reasons for the indication of allowable subject matter: the prior art, individually or in combination, fails to disclose, teach or suggest in regard to claim 1, computing an apex height return map of two consecutive flight phases

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for different angles of attack, selecting all pairs of leg angle and apex heights that result in a desired apex height of a next consecutive flight phase, for each leg angle-apex height pair, computing the corresponding flight times from apex to touch-down and storing dependencies between flight time after apex and leg angle for any desired consecutive apex heights. The closest prior art, "The Bow Leg Hopping Robot" by Zeglin, discloses being able to determine the angle of attack as the robot is landing (Chapter 5) but fails to specifically disclose computing an apex height and computing the corresponding flight times from apex to touch-down. Claims 2-9 further define the invention.

The prior art, individually or in combination, fails to disclose, teach or suggest in regard to claim 10, determining a time to apex and selecting an angle of attack based upon time after apex. As discussed above, the closest prior art discloses being able to determine the angle of attack as landing and provides rotational leg control continuously (Chapter 4 and 5), but does not disclose determining a time to apex and selecting the angle of attack based upon that time. Claims 11-21 further define the invention.

The prior art, individually or in combination, fails to disclose, teach or suggest in regard to claim 22 a controller, coupled to the body and responsive to the control signals, to determine for a next contact phase an angle of attack to reach a desired apex height in a flight phase following the next contact phase. As discussed above the prior art does disclose being able to determine the angle of attack as landing and provides an actuator to adjust orientation of the leg during a flight phase, but fails to

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disclose determining a next contact phase an angle of attack to reach a desired apex height. Claims 23-26 further define the invention.


***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marie A. Weiskopf whose telephone number is (571) 272-6288. The examiner can normally be reached on Monday-Thursday between 7:00 AM and 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MW

  
GARY CHIN  
PRIMARY EXAMINER